

Multi-Purpose Grippable Bell

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates generally to a top portion of a container designed with a multi-purpose grip, which increases the ability of a person (a customer) to grip the container by providing multiple gripping options, and more particularly to a tiered bell-shaped top portion of container designed to accommodate grips of various hand sizes, or, different sized grips for a single hand that may hold the container more securely or be more comfortable to the person.

Related Art

10 [0002] As explained in the Assignee's U.S. Patent No. 6,044,997 to Ogg, the upper portion or dome of a container has been generally characterized by a circular cross-section with a waist. Some people have been known to use the waist to grip the container for pouring with one hand, but this is not satisfactory in large containers because the waist is too large to be securely gripped by a number of customers desiring to pour out the contents of the container. While Ogg mentions that a stepped dome would be easier to grip, Ogg dismisses this concept because a stepped dome would not facilitate the pouring of contents from the container.

[0003] Another container by the Assignee, disclosed in U.S. Application No. 10/294,696 filed November 15, 2002, has an upper portion or dome with four equally positioned and sized indentations, and a body section with vacuum compression panels. As a result of the equally sized and placed indentations, the upper portion of the '696 Application is formed to a single-size grip. That is, the '696 Application is designed for a single hand size. While the indentations provide a

secure grip of the upper dome, the upper portion without the indentations is relatively smooth so that a grip on those portions would be less secure, and when the container is filled may result in a spill.

[0004] Containers, such as U.S. Patent Nos. 5,392,937 to Prevot et. al. and
5 5,598,941 to Semersky et. al., employ special grip panels formed so that a person can grip the container. These containers have the advantage of providing relatively easy pourability for certain sizes; however, grip panels are difficult to provide in large size containers. In addition, these known grip panels are provided below the waist of the container and on either side of the container thereby reducing the usual areas on
10 which a label is placed. It is apparent, therefore, that there is a need for a plastic container that provides the ready grippability and pourability afforded by grip-panel containers while providing large label placement areas and that has sufficient strength throughout to provided rigidity and minimize the flex of the container panels under vacuum. All references cited herein are incorporated by reference as if each had been
15 individually incorporated.

BRIEF SUMMARY OF THE INVENTION

[0005] In summary, the instant invention is directed to a multi-purpose grip that increases ergonomics/grippability of a container, which accommodate users of
20 various hand sizes and facilitates their ability to pour out the contents of the container without reducing the labeling area of the container. The multi-purpose grip, according to the invention, is formed in the dome of a container and has curved horizontal ribs, which form tiers or steps of the dome, to add rigidity and minimize flex of a panel under vacuum.

[0006] This invention is contrary to the teachings of the prior art, in that the container according to the invention uses a stepped dome with modifications to overcome problems associated with known containers.

[0007] In addition, the container according to the invention fulfills a long felt
5 need for an easily grippable, large container, and at the same time offers advantages not previously realized by providing multiple sized grips on a single container.

[0008] A dome for a container, according to the invention, has a longitudinal axis and includes an upper portion with a flanged finish surrounding the longitudinal axis and adapted to receive a cap where the upper portion extends outwardly and
10 downwardly in a substantially annular fashion from the flanged finish to a first horizontal rib; an intermediate portion extending outwardly and downwardly from under the first horizontal rib of the upper portion to a second horizontal rib; a lower portion extending outwardly and downwardly from under the second horizontal rib to a third horizontal rib where the third horizontal rib is substantially annular; and a grip
15 panel formed within opposite side surfaces of the dome from under the first horizontal rib to above the third horizontal rib, where the opposite grip panels enable a thumb and forefingers of a hand size to grip the container while opposing surfaces of the intermediate and lower portions without the grip panel respectively enable a thumb and forefingers of the hand or another hand size to grip the container in a
20 different manner. That is, one container has at least two different holding grips that allows a user to pick up the container in a secure and comfortable manner without thinking about how one is holding the container.

[0009] Further objectives and advantages, as well as the structure and function of preferred embodiments will become apparent from a consideration of the description, drawings, and examples.

5 **BRIEF DESCRIPTION OF THE DRAWINGS**

[00010] The foregoing and other features and advantages of the invention will be apparent from the following, more particular description of a preferred embodiment of the invention, as illustrated in the accompanying drawings wherein like reference numbers generally indicate identical, functionally similar, and/or
10 structurally similar elements.

[00011] FIG. 1 is a perspective view of an exemplary container that includes a dome according to the present invention;

[00012] FIG. 2 is a side view of the dome of the exemplary container of Figure 1;

15 [00013] FIG. 3 is another side view of the dome of the exemplary container shown in Figure 1 taken 90° from the side view of Figure 2;

[00014] FIG. 4 is a cross-sectional view of the dome of Figure 2 taken along line 4-4;

[00015] FIG. 5 is a top view of the dome of Figure 2;

20 [00016] FIG. 6 illustrates the dome according to the invention showing a large hand grasp the dome across the larger grip area in a secure grip; and

[00017] FIG. 7 illustrates the dome according to the invention showing a smaller hand grasp the dome across the smaller grip area in a secure grip.

DETAILED DESCRIPTION OF THE INVENTION

[00018] Embodiments of the invention are discussed in detail below. In describing embodiments, specific terminology is employed for the sake of clarity. However, the invention is not intended to be limited to the specific terminology so
5 selected. While specific exemplary embodiments are discussed, it should be understood that this is done for illustration purposes only. A person skilled in the relevant art will recognize that other components and configurations can be used without parting from the spirit and scope of the invention.

[00019] Looking at Figure 1 of the drawings, an exemplary container with
10 a dome according to the invention is shown. The container has a longitudinal axis A extending through the center of the three-dimensional container. Container has a dome section 2, a body section 4, and a base 6. The dome section 2, according to the invention, is shown in Figures 2 and 3. The dome section 2 of container has an upper portion 8 with a flanged finish 10, an intermediate portion 14, and a lower portion 18,
15 which together with horizontal ribs 12, 16, 20 at the base of each respective portion form tiers or steps of dome section 2 to add rigidity and minimize flex of a panel under vacuum.

[00020] Figures 1-7 of the drawings include shade lines illustrating the various subtle curves of dome section 2. Upper portion 8 extends outwardly and
20 downwardly from a base of the flanged finish 10 in a substantially annular fashion to a first horizontal rib 12. An upper side of horizontal rib 12 curves away from longitudinal axis A at a steeper angle than the relatively smooth upper portion 8 to a mid-section of horizontal rib 12 and then curves downwardly and inwardly toward an upper side of intermediate portion 14. That is, the horizontal rib curves around the

container and curves about a vertical axis substantially parallel to the longitudinal axis A.

[00021] Intermediate portion 14 extends downwardly and outwardly from a bottom side of the inwardly curved horizontal rib 12 to a second horizontal rib 16.

- 5 The second horizontal rib is curved like the first horizontal rib 12, but it may not be as pronounced as first horizontal rib 12. That is, the second horizontal rib may be shorter in height than first horizontal rib 12. In an exemplary embodiment, intermediate portion 14 extends outwardly and downwardly until it reaches the second horizontal rib 16, which curves outward to a mid-section of horizontal rib 16.
- 10 Horizontal rib 16 then curves downwardly and inwardly toward the longitudinal axis A of the container where it connects with an upper side of lower portion 18.

[00022] Lower portion 18 extends downwardly and outwardly from a bottom side of the inwardly curved horizontal rib 16 to a third horizontal rib 20. The third horizontal rib is curved liked the first and second horizontal ribs 12, 16 but, its

15 contour may bulge outward more than the first and second horizontal ribs 12, 16. That is, the third horizontal rib 20 may be similar in height to that of the first horizontal rib 12 and may be taller in height than horizontal rib 16. In the exemplary embodiment, lower portion 18 extends outwardly and downwardly until it reaches the third horizontal rib 20, which curves outward to a mid-section of horizontal rib 20.

- 20 The mid-section of horizontal rib 20 may be relatively flat for a distance. Horizontal rib 20 then curves downwardly and inwardly toward the longitudinal axis A of the container where it connects with a waist 22 of the container disposed between body section 4 and dome section 2. The third horizontal rib 20, like the first horizontal rib 12 may be substantially annular in form, as shown in the exemplary embodiments.

[00023] A grip panel 24 is formed in opposite side surfaces of dome section 2 extending from first horizontal rib 12 to the third horizontal rib 20. In the exemplary embodiment, grip panel 24 has a central section 25 that is formed under the first horizontal rib 12 and extends to above the third horizontal rib 20. As explained below, on either side of the central section 25, grip panel 24 curves away from either the first horizontal rib 12 or the third horizontal rib 20 and, on either side of grip panel 24, the panel extends from below the first horizontal rib 12 at the intermediate portion 14 to a point above the third horizontal rib 20 in the lower portion 18.

10 [00024] While the illustrated exemplary embodiment employs a grip panel 24 with a central section 25, the Applicants envision a container with a curved contour as the grip area connecting the top horizontal rib to the bottom horizontal rib. The curved contour, grip area may have a single vertical rib located in the center, two vertical ribs and a recessed central portion, or no vertical ribs or ripples. The number of ripples or vertical ribs depends upon the container size and material composition and thus can vary from 0 to any number of ripples. The container grip area may be oval, rectangular, square or other design as long as at least three horizontal ribs form the dome section 2.

[00025] Grip panel 24 is recessed in opposite side surfaces of dome section 20 2 and is formed with vertical support, as described below, which adds structure for improved top load performance. Figures 6 and 7 clearly illustrate the two different secure grips that can be obtained with the dome section according to the invention. As can be seen from the cross-sectional view of dome section 2 in Figure 4, grip panels 24 are formed within the dome section resulting in a first grip area 26 where a

thumb and forefingers of one hand grasp opposing grip panels **24** and the portion of the hand between the thumb and forefinger spans the unrecessed portion of intermediate section **14**, as illustrated in Figure 7. If dome section **2** is grasped so that the thumb and forefingers of a hand rest in the grooves formed by intermediate

5 portion **14** and lower portion **18** above and below the second horizontal rib **16**, a second wider, secure grip area **28** results as shown in Figure 6. Consequently, the dome section according to the invention may be designed to provide a small grip area **26** for a child's or a small adult's hands and a larger grip area **28** for a larger hand of an adult. Alternatively, a single hand can grip the container with the dome structure in

10 more than one manner so that the user does not have to think about securely holding the container.

[00026] Grip panel **24** is formed so that it is recessed into a side surface of dome section **2** and a ribbed area **30** surrounds each grip panel. The ribbed area **30** adds more rigidity to the resultant dome and improves top load. At its widest

15 horizontal point, ribbed area **30** of grip panel **24** is substantially parallel to longitudinal axis **A** of container **1**. This provides strength to the recessed grip panel **24**. A second horizontal rib **16** is disposed on either side of recessed grip panel **24**. Grip panel **24**, at its widest point, extends from one second horizontal rib **16** to the other second horizontal rib **16**. The contour of grip panel **24** rounds upwards toward

20 first horizontal rib **12** in an upper curve. Approximately in the middle of grip panel **24**, an upper parabolic curve **34** extends into first horizontal rib **12** from the upper curve on the left-hand side and downward on the right-hand side. In a similar fashion, the contour of grip panel **24** rounds downward on either side toward third horizontal rib **20** in a lower curve **36**. Another parabolic curve **38** extends into third horizontal

rib 20 substantially underneath parabolic curve 34. Lower parabolic curve 38 may be more pronounced than the upper parabolic curve 34.

[00027] The center horizontal rib 16 prevents ovalization of the dome of the container. Ovalization occurs in a plastic container when the container is filled
5 with a hot-product and then cooled. The cooling process produces a vacuum within the container that pulls the plastic walls of the grip area 24 closer to axis A. As a result of the center horizontal rib, the dome of the container with the curved contour grip area cannot be pulled in any further to axis A thereby preventing ovalization. Further, the horizontal ribs of the dome section 2 strengthen the plastic container
10 when filled with a hot product. While the results of stacking empty plastic containers according to the invention or top loading the container were not as high as desired, the combination of the vacuum produced after hot-filling the container and the horizontal ribs significantly improved the top-loading of the containers according to the invention. Testing showed that after hot-filling a container according to the
15 invention, the top loading was significantly improved from approximately 45%-65% on average.

[00028] As shown in the exemplary embodiment of Figures 3-4, each grip panel 24 includes at least one vertical rib 40 curving inwardly toward longitudinal axis A from third horizontal rib 20 to a point of vertical rib 40 and then curves
20 outwardly from longitudinal axis A to first horizontal rib 12. According to the invention, the grip area should have a compound curvature with either no vertical ribs or a plurality of vertical ribs, as described above. While three vertical ribs are shown in the exemplary embodiment, as many vertical ribs that may fit in the grip area may be used. Three vertical, rippled ribs 40 are used in the exemplary embodiment to add

structure for improved top load performance and gripability. As shown in the cross-sectional view of Figure 4 and by the shade lines of Figures 1 and 2, the center vertical rib 40 is more pronounced than the two vertical ribs 40 on either side of the center vertical rib. However, according to the invention, no vertical rib needs to be more prominent than another vertical rib. In the exemplary embodiment, central vertical rib 40 protrudes out of grip panel 24 and has a transverse curve from the left-side to the right side of central vertical rib 40. The transverse curve of the central vertical rib 40 begins curving away from an unrippled surface of the grip panel 24 about the same location as the beginning of a parabolic curve 34, 38. The vertical rib 40 reaches its highest level from the grip panel unrippled surface at approximately the "peak" of each parabolic curve. However, all vertical ribs 40, in the exemplary embodiment, are less prominent than ribbed area 30 that surrounds each grip panel 24.

[00029] As indicated by the shade lines of Figures 1 and 2 and the cross-section of dome section 2 in Figure 4, the two outer vertical ribs 40 are more subtle ripples than the prominent protrusion formed by the central vertical rib 40, which includes parabolic curves 34, 38. As shown in Figures 2 and 4, the three exemplary vertical ribs 40 form dimples or recesses 42 on either side of the exemplary ribs 40. It is envisioned that a single vertical rib 40 may provide sufficient structure so that dome section 2 does not collapse when a number of containers are stacked on top of the container according to the invention. As mentioned above, if there is a single vertical rib 40, dimples or recesses 42 preferably would be formed on either side thereof. As a result, a person grasping the filled container according to the invention would feel a secure grip when their thumb and forefinger rests in one of grooves or recesses 42. Thus, grip area 26 for

a child's or small adult's hand has dimples or recesses **42** so that the person (customer) feels the secure grip obtained in that area, while the recesses between horizontal ribs **12,16, 20** provide a secure grip feeling in grip area **28** for a larger adult hand.

- 5 **[00030]** The embodiments illustrated and discussed in this specification are intended only to teach those skilled in the art the best way known to the inventors to make and use the invention. Nothing in this specification should be considered as limiting the scope of the present invention. All examples presented are representative and non-limiting. The above-described embodiments of the
- 10 invention may be modified or varied, without departing from the invention, as appreciated by those skilled in the art in light of the above teachings. It is therefore to be understood that, within the scope of the claims and their equivalents, the invention may be practiced otherwise than as specifically described.